Currently Known and Reported Discomycetes (Ascomycota) of Hawai'i[1]

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Abstract: A species list of Discomycetes that occur in Hawai'i has been compiled that includes all previously reported species in the literature. Comments are provided for reports if there are changes in nomenclature, author citation, or for taxonomic revisions based on reexamination of collections. Fifteen taxa, new to Hawai'i, are reported. The list of accepted taxa includes a total of 47 species, one including two subspecies. Three previously reported species were misidentified and apparently do not occur in Hawai'i. Three species formerly reported as Discomycetes are now excluded as Dothideomycetes. The relatively small number of species of Discomycetes recorded from Hawai'i is probably due to lack of an exhaustive effort to survey this group of Fungi. Although some species are recorded as growing on endemic or indigenous host plants, species of Discomycetes were not designated as endemic or indigenous due to insufficient knowledge of species distribution and the wide range of variations in host preferences.

THE FUNGI KNOWN as Discomycetes or cup fungi are a class in the Ascomycota, with over 12,000 species (Kirk et al. 2001). The common name refers to the cup- to disk-shaped fleshy fruiting bodies found in many species, but there is a great deal of variation in the morphology of the fruiting body. The fruiting body in this group is referred to as an apothecium that is characterized by the asci and ascospores being completely exposed when mature.

Few surveys have been carried out of the Discomycetes of Hawai'i. Stevens (1925) published the first extensive survey of the Fungi of Hawai'i, which included only five species of Discomycetes; four of these specimens were collected by H. L. Lyon. The most extensive study was carried out by Cash (1938), who identified 35 species of Discomycetes, six of which were described as new, all from the collections of C. L. Shear and N. E. Stevens and the herbarium of Otto Degener. Recent records of Hawaiian Discomycetes are *Sarcoscypha mesocyatha*, a species described as new by Harrington (1997), and *Schizoxylon cordobense* (Sherwood 1977*c*). Thus, even today, the Discomycetes of Hawai'i are still poorly known.

MATERIALS AND METHODS

In this paper we have compiled a list of the Discomycetes that were identified from specimens collected by G.J.W. as well as species previously recorded from Hawai'i by Stevens (1925), Cash (1938), Sherwood (1977*a*,*c*), and Harrington (1997), with updating of the nomenclature and author citations. Fourteen additional taxa are reported as new to Hawai'i. The newly reported species are preceded by an asterisk (*). Collections reported as *Karschia taveliana*, *Lachnea scutellata*, *Sarcosoma godronioides*, and *Schizoxylon insigne* by Cash (1938) were misidentified, and these species apparently do not occur in Hawai'i. This compilation does not represent exhaustive collecting of discomycetes and reports only on previously collected species from earlier studies and those collected by G.J.W. while collecting agarics.

The collection numbers of Shear and Stevens (S&S) and Degener (D) are reported

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as well as their current accession numbers at the National Fungus Herbarium in Beltsville (BPI), and collection numbers of Lyon and G.J.W. are listed as Lyon and GJW, followed by the accession numbers, respectively. Unless otherwise stated, we have not reexamined previously reported collections. Other herbaria in which Hawaiian discomycete collections have been deposited are the Plant Pathology Herbarium, Cornell University (CUP), and Herbarium Pacificum, Bishop Museum (BISH).

Notes were taken of each collection to record the size, shape, texture, odor, etc., of the fruiting bodies for each collection while the specimens were still fresh because such characteristics are lost when the specimens are dried in a plant dryer. Microscopic characteristics were preserved by drying, which also allowed later revival for identification by mounting a section of the fruiting body in 3% aqueous KOH.

The list here has been divided into orders, followed by species names. If a name change or a correction in citation of authors from that originally recorded was necessary, the original citation and a reference to the original record are provided. Comments have also been included for each of the taxa if there are changes in nomenclature or taxonomy.

RESULTS

Order Rhytismatales

1. *Propolis farinosa* (Fr.) Fr.

Reported as *Propolis faginea* (Schrad.) Karst. (Cash 1938).

Comment: Sherwood (1977*b*) made the combination *Propolomyces farinosus* (Pers.) Sherwood, but her new generic name became a synonym when *Propolis* was conserved under the International Code of Botanical Nomenclature (ICBN). This species has many synonyms, including *Propolis versicolor* (Fr.) W. Phillips. Cash identified S&S 597 = BPI 667636 as *P. faginea*.

Order Ostropales

2. *Acarosporina hormospora* (Speg.) Sherwood

Reported as *Schizoxylon abutilonis* sp. nov. [Cash] (Cash 1938).

Comment: Sherwood (1977*c*) examined Cash's Hawaiian collection (S&S 551 = BPI 668884) of *S. abutilonis* and concluded that it was synonymous with *S. hormosporum*, which she transferred to the genus *Acarosporina*.

3. *Schizoxylon cordobense* (Speg.) Sherwood

Reported as *Schizoxylon insigne* (De N.) Rehm (Cash 1938).

Comment: Sherwood (1977*c*) reexamined the Hawaiian collection (S&S 553 = BPI 668936) and concluded that Cash had misidentified it.

4. *Stictis hawaiiensis* E. K. Cash

Reported as *Stictis hawaiensis* sp. nov. [Cash] (Cash 1938).

Comment: Sherwood (1977*a*) corrected Cash's orthographic error, reexamined Cash's type (D 3776 = BPI 668581), and redescribed the species with citation of additional material from the Philippines, Ceylon, and South America.

5a. *Stictis radiata* (L.) Pers. subsp. *radiata*

Reported as *Stictis radiata* (L.) Pers. (Cash 1938).

Comment: Although Sherwood (1977*a*) described this taxon and examined numerous collections from throughout the world, the Hawaiian collections (S&S 548 = BPI 668711 and S&S 546 = BPI 66877) that Cash had identified as this species were not included.

5b. *Stictis radiata* subsp. *intermedia* (Speg.) Sacc. (Cash 1938)

Comment: Although Sherwood (1977*a*) included this subspecies and examined collections from a variety of localities, the Hawaiian collection (S&S 550 = BPI 668800) that Cash had identified as this subspecies was not included. BPI has cataloged this subspecies as a variety, Spegazzini's original ranking.

6. *Stictis stellata* Wallr. var. *philippinensis* Rehm

Reported as *Stictis stellata* var. *philippensis* Rehm (Cash 1938).

Comment: Sherwood (1977*a*) did not recognize this variety and did not examine the collection (S&S 550 = BPI 668800) that Cash had identified as this variety. The varietal epithet was misspelled by Cash.

Order Helotiales

7. *Ascocoryne sarcoides* (Jacq.) J. W. Groves & D. E. Wilson

Reported as *Coryne sarcoides* (Jacq.) Tul. (Cash 1938).

Comment: Cash identified S&S 571 = BPI 667347 as this species.

8. *Bisporella sulfurina* (Quél.) S. E. Carp.

Reported as *Helotium sulphurinum* Quél. (Cash 1938).

Comment: BPI has cataloged this species as *Bisporella discedens* (P. Karst.) S. E. Carp. Cash identified S&S 573 = BPI 662570 and S&S 599 = BPI 662609 as *H. sulphurinum*.

9. *Calloria cremea* (E. K. Cash) Seaver

Reported as *Helotium cremeum* Cash (Cash 1938).

Comment: Although Seaver (1951) made the combination for the current name, he did not examine the type collection on *Pteridium*, described by Cash (1936) from California, and apparently did not know of nor examine any of the collections that Cash later identified from Hawai'i, on *Cibotium* and *Gleichenia* (S&S 549 = BPI 654422, S&S 583 = BPI 654423, S&S 587 = BPI 654420, S&S 588 = BPI 654421).

10. *Calloriopsis gelatinosa* (Sacc.) Syd. & P. Syd.

Reported as *Peziza gelatinosa* (as "*gelantinosa*") Hall. (Stevens 1925) and also as *Calloriopsis gelatinosa* (Ellis & Mart.) Syd. (Cash 1938).

Comment: S&S 538 = BPI 667458, S&S 539 = BPI 667457, S&S 540 = BPI 667455, and S&S 569 = BPI 6677456 were identified by Cash as *C. gelatinosa*. The field label of Lyon 22F = CUP-D 6994 indicates that this is the collection that Stevens (1925) referred to as "*Peziza gelantinosa*," though the spelling is correctly given in his index (p. 187). Synonyms are *P. gelatinosa* Ellis & G. Martin, a later homonym, and *Orbilia gelatinosa* Sacc., as "(Ell. & Mart.) Sacc." Korf (2007) revisited the peculiar problem with Art. 58 of the ICBN whereby all reference to Ellis & G. Martin is deleted, even though the type specimen of the name is theirs. Korf proposed using a citation such as *Calloriopsis gelatinosa* (Ellis & G. Martin ex Sacc.) Syd. & P. Syd., an amplified use of the connective "ex." Some colleagues believe that such an amplified use is unwise, so another connective may be proposed for the next edition of the Code.

11. *Calycellina sadleriae* (F. Stevens & P. A. Young) Dennis

Reported as *Dasyscypha sadleriae* Stevens & Young (Stevens 1925, Cash 1938).

Comment: Dennis (1963) reexamined F. Stevens 1078, Jul. 31, 1921 = CUP-D 6984, an isotype, and made the current combination.

12. *Chlorociboria aeruginascens* (Nyl.) Kanouse ex C. S. Ramamurthi, Korf, & L. R. Batra

Reported as *Chlorosplenium aeruginascens* (Nyl.) Karst. (Cash 1938).

Comment: BPI has cataloged this species as *Chlorosplenium aeruginascens*. Cash identified D 2931 = BPI 657224 as this species.

13. **Chlorosplenium chlora* (Schwein.) M. A. Curtis

GJW 1266 (BISH) = CUP 63505. Substrate: introduced slash pine [*Pinus elliottii*], USA, Hawai'i, Waimea Canyon State Park, Kaua'i, coll. by G. J. Wong, Jan. 1, 1994, det. by Korf.

14. *Crocicreas helios* (Penz. & Sacc.) S. E. Carp.

Reported as *Davincia helios* Penz. & Sacc. (Cash 1938).

Comment: BPI has cataloged this species as *D. helios*. Carpenter (1981) examined the Hawaiian collection (D 2924 = BPI 662711) that Cash identified as *D. helios* and included it in his monograph of *Crocicreas* as *C. helios*.

15. *Godronia lantanae* (E. K. Cash) Seaver

Reported as *Scleroderris lantanae* sp. nov. [Cash] (Cash 1938).

Comment: Seaver (1945) made the current combination, but there is no evidence that he reexamined Cash's type of this species, D 3032 = BPI 665843.

16. *Lachnum abnorme* (Mont.) J. H. Haines & Dumont (as "*abnormis*")

Reported as *Erinella longispora* Karst. (Stevens 1925, Cash 1938).

Comment: BPI cataloged this species under *E. longispora*, a synonym. Haines and Dumont (1984) did not examine the Hawaiian collection (S&S 544 = BPI 663113) and did not list this species as occurring in Hawai'i.

17. **Lachnum brasiliense* (Mont.) J. H. Haines & Dumont

GJW 1063 (BISH) = CUP 63501. Substrate: *Casuarina* sp. (bark of living trees), USA, Hawai'i, Moloka'i Island, Pālā'au State Park, coll. by G. J. Wong, Mar. 26, 1991, det. by Korf.

18. *Lachnum lanariceps* (Cooke & W. Phillips) Spooner

Reported as *Dasyscypha javanica* Penz. & Sacc. (Cash 1938).

Comment: BPI has cataloged this species under *Dasyscyphus javanicus*. These are synonyms. Cash identified S&S 585 = BPI 661783 as *Dasyscypha javanica*.

19. *Lachnum ulei* (G. Winter) S. A. Cantrell & J. H. Haines

Reported as *Dasyscypha ulei* (Wint.) Sacc. (Stevens 1925).

Comment: We were unable to locate Stevens' Hawaiian collection. Haines (1980) did not examine the Hawaiian collection and did not list Hawai'i in the species distribution. It is a doubtful record, and may well be *L. varians* var. *varians*.

20. *Lachnum varians* (Rehm) M. P. Sharma var. *varians*

Reported as *Lachnum gleicheniae* sp. nov. [Cash] (Cash 1938).

Comment: BPI cataloged this specimen as *Dasyscyphus varians* (Rehm) Haines. Haines (1980) reexamined Cash's collections D 2810 = BPI 662174 (type), S&S 580 = BPI 662176, S&S 582 = BPI 662175 of *L. gleicheniae* and synonymized it with *Dasyscyphus varians* Rehm var. *varians*.

21. **Lachnum virgineum* (Batsch) P. Karst.

GJW 1253 (BISH). Substrate: on decorticated twigs, USA, Hawai'i, Kōke'e State Park, Kaua'i, along Nu'alolo Trail, coll. and det. by: G. J. Wong, Jan. 7, 1994.

22. **Moellerodiscus conocarpi* (Seaver & Waterston) Dumont

GJW 1210 (BISH) = CUP 63502. Substrate: *Pandanus* sp. (well-decomposed branch), USA, Hawai'i, O'ahu, Kāne'ohe, Ho'omaluhia Botanical Garden (Hawaiian Ethnobiology Sect.), coll. by G. J. Wong, Dec. 11, 1993, det. by Korf. Notes: Apothecia originating from black stromatic areas covering substrata.

23. **Moellerodiscus lentus* (Berk. & Broome) Dumont

GJW 1228 (BISH) = CUP 63503. Substrate: (*Psidium* sp.) guava leaves, USA, Hawai'i, Kaua'i, Hā'ena State Park, Kalalau Trail, coll. by G. J. Wong, Jan. 3, 1994, det. by Korf.

Notes: "Originating from erumpent discrete sclerotia," G. J. Wong [sclerotia not seen by R. P. Korf].

24. *Mollisia cinerea* (Batsch) P. Karst.

Reported as *Mollisia cinerea* (Batsch) Karst. (Cash 1938).

Comment: Cash identified S&S 575 = BPI 658137 as this species.

25. *Mollisia petiolorum* E. K. Cash

Reported as *Mollisia petiolorum* sp. nov. [Cash] (Cash 1938).

Comment: Cash examined S&S 554 (type) = BPI 658282, S&S 536 = BPI 65828, S&S 555 = BPI 658280, S&S 790 = BPI 658283, and S&S 791 = BPI 658281 and described this species as new.

26. *Psilachnum chrysostigmum* (Fr.) Raitv.

Reported as *Pezizella chrysostigma* (Fr.) Sacc. (Cash 1938).

Comment: Cataloged at BPI as *Allophylaria chrysostigma* (Fr.) Nannf. Five collections, S&S 545 = BPI 656751, S&S 586 = BPI 656732, S&S 593 = BPI 656732, S&S 547 or 590 = BPI 656750, and BPI 656735, were identified by Cash as *Pezizella chrysostigma*.

27. *Pseudopeziza medicaginis* (Lib.) Sacc. (Stevens 1925)

Comment: Stevens listed three collections by Lyon, 340, 404, and one with no number, that he identified as this species, but we have not been able to locate these collections.

28. *Trichopeziza citrinoalba* Penz. & Sacc.

Reported as *Dasyscypha citrino-alba* (Penz. & Sacc.) comb. nov. [Cash] (Cash 1938).

Comment: This fungus is probably a species of *Lachnum*. Another synonym is *Trichodiscus citrinoalbus* (Penz. & Sacc.) Kirschst. Cash identified two collections, D 2955 = BPI 661500 and S&S 579 = BPI 661501, as this species.

Order Orbiliales

29. *Orbilia abutilonis* E. K. Cash

Reported as *Orbilia abutilonis* sp. nov. [Cash] (Cash 1938).

Comment: We consulted Hans-Otto Baral, who is doing a major monograph of *Orbilia* and its allies, and he has advised us that he accepts this as a good species but with major modifications of Cash's description necessary. Cash's type specimen is S&S 552 = BPI 666701.

30. *Orbilia epipora* (Nyl.) P. Karst.

Reported as *Orbilia epipora* (Nyl.) Karst. (Cash 1938).

Comment: Cash identified S&S 576 = BPI 666781, S&S 577 = BPI 666782, and S&S 598 = BPI 666778 as this species. Identification from dried material is usually unsatisfactory according to H. O. Baral (pers. comm.).

31. *Orbilia leucostigma* (Fr.) Fr.

Reported as *Orbilia leucostigma* Fries (Cash 1938).

Comment: Cash identified S&S 578 = BPI 666861 as this species. Identification from dried material is usually unsatisfactory according to H. O. Baral (pers. comm.).

Order Pezizales

32. *Ascobolus stercorarius* (Bull.) J. Schröt.

Reported as *Ascobolus stercorarius* (Bull.) Schroet. (Cash 1938).

Comment: Cash identified two collections, S&S 541 and S&S 588, as this species. BPI designated the two collections as BPI 663221 and BPI 663232 but did not enter the collection numbers given in Cash (1938) to distinguish between the two collections. The possibility still exists that the purported synonymy of *A. stercorarius* and *A. furfuraceous* Pers. is incorrect and that the two species have been regularly confused.

33. *Cheilymenia coprinaria* (Cooke) Boud.

Reported as *Lachnea coprinaria* (Cooke) Phill. (Cash 1938).

Comment: BPI cataloged this species as *Humaria coprinaria* (Cooke) Kanouse (a superfluous recombination of the earlier *H. coprinaria* [Cooke] Hazsl.). Cash identified two collections, S&S 556 = BPI 573005 and S&S 557 = BPI 572877, as this species. The Index Fungorum Web site gives *Cheilymenia fimicola* (De Not. & Bagl.) Dennis as the current name, but Moravec (2005) in his world monograph of the genus claimed that "*fimicola*" is based on a nomen dubium. We follow Moravec.

34. *Cheilymenia granulata* (Bull.) J. Moravec

Reported as *Humaria granulata* (Bull.) Quél. (Cash 1938).

Comment: BPI cataloged this species as *Ascophanus granulatus*. Cash identified D 3861 = BPI 663581 as *H. granulata*.

35. **Morchella esculenta* (L.) Pers.

GJW 968 (BISH). Substrate: on soil, under mixed deciduous trees, USA, Hawai'i, Wai'anae Range, O'ahu, Pahole Gulch, coll. and det. by G. J. Wong, Dec. 28, 1990.

36. *Pachyella clypeata* (Schwein.) Le Gal.

Reported as *Peziza clypeata* Schw. (Cash 1938).

Comment: BPI cataloged this species as *Peziza clypeata*. Cash so identified S&S 566 = BPI 570351. The specimen has been annotated by D. H. Pfister as typical *Pachyella clypeata*.

37. **Peziza ampliata* Pers.

GJW 1252 (BISH) = CUP 62700. Substrate: *Acacia koa* (bark of living tree), USA, Hawai'i, Kōke'e State Park, Kaua'i, along Nu'alolo Trail, coll. by G. J. Wong, Jan. 7, 1994, det. by Korf.

38. **Peziza arvernensis* Boud.

GJW 1203 (BISH) = CUP 63504. Substrate: in wood mulch, USA, Hawai'i, O'ahu, Kā-

ne'ohe, Ho'omaluhia Botanical Garden (Hawaiian Ethnobiology Sect.), coll. by G. J. Wong, Dec. 11, 1993, det. by Korf.

39. **Plectania rhytidia* (Berk.) Nannf. & Korf f. *platensis* (Speg.) Donadini

Reported as *Sarcosoma godronioides* Rick (Cash 1938).

Comment: Cash identified D 3100 = BPI 667118, S&S 559 = BPI 667118, and S&S 569 = BPI 667052 as Rick's species. She also discussed these and other extralimital collections so identified in BPI at some length. Since the identity of Rick's species still remains in doubt, R.P.K. undertook a study of all specimens at BPI under this name. All three Hawaiian specimens are *P. rhytidia* f. *platensis.* The authentic collection by Rick from Brazil from the Lloyd herbarium (BPI 721897) is without spores and cannot be identified to species: it is certainly a species of *Plectania*, but the hairs do not resemble those of *P. rhytidia*. The Parks 5626 collection Cash mentioned from California is *P. rhytidia* f. *rhytidia*. A second Parks collection, 6262, also from California, is also without mature spores and is identified only as *Plectania* sp.

40. *Pyronema omphalodes* (Bull.) Fuckel (Cash 1938)

Comment: Cash identified S&S 542 = BPI 571210 as this species.

41. *Sarcoscypha mesocyatha* F. A. Harr.

CUP 63940 (typ): on twig of *Acacia koa*, coll. by D. E. Hemmes, Jan. 9, 1995, USA, Hawai'i, Kōke'e State Park, Kaua'i, along Nu'alolo; CUP 62699 (paratype) = GJW 1242 (isoparatype, BISH), on *Myrsine* sp. (woody endocarp), USA, Hawai'i, Kōke'e State Park, Kaua'i, along Nu'alolo Trail, coll. by G. J. Wong, Jan. 7, 1994, det. by F. A. Harrington.

Comment: This species was described by Harrington (1997) and is known only from Hawai'i and tropical China (Zhuang 2000).

42. **Scutellinia ahmadii* (E. K. Cash) S. C. Kaushal

GJW 1209 (BISH) = CUP 63652. Substrate: humus mostly composed of wood chips, USA, Hawai'i, O'ahu, Kāne'ohe, Ho'omaluhia Botanical Garden (Hawaiian Ethnobiology Sect.), coll. and det. by G. J. Wong, Dec. 11, 1993.

43. **Scutellinia jungensis* (P. Henn.) Clem.

Reported as *Lachnea scutellata* (L.) Gill. (Cash 1938).

Comment: Schumacher (1990) examined collections identified as *Scutellinia scutellata* from low-latitude and tropical areas and has shown that such collections are referable elsewhere and that the species is known with certainty only from temperate and boreo-arctic zones. R.P.K. has reexamined all the *Scutellinia* collections at BPI from Hawai'i, including some unknown to Cash, who reported seven collections as *L. scutellata*. Her species concept appears to have been very broad for this species. Four of these are here identified as the common tropical and subtropical species *S. jungensis:* S&S 564 = BPI 572901, S&S 565 = BPI 572899, D 3052a = BPI 573507, S&S 562 = BPI 573382. Other BPI collections of *L. jungensis* from Hawai'i are Lee 2 = BPI 5734884, S&S without number = BPI 573654, and GJW 1206 (BISH), occurring on humus mostly composed of wood chips, USA, Hawai'i, O'ahu, Kāne'ohe, Ho'omaluhia Botanical Garden (Hawaiian Ethnobiology Sect.), coll. by G. J. Wong, Dec. 11, 1993.

44. **Scutellinia nigrohirtula* (Svrček) Le Gal

Reported as *Lachnea scutellata* (L.) Gill. (Cash 1938).

Comment: Cash identified S&S 561 = BPI 573397 as *L. scutellata*. Another similarly misidentified Hawaiian specimen in BPI is Bessey 526 = BPI 573432. Both are the very different short-haired *S. nigrohirtula.*

45. **Scutellinia setosa* (Nees) Kuntze

Reported as *Lachnea scutellata* (L.) Gill. (Cash 1938).

Comment: *Scutellinia setosa* is characterized by comparatively tiny apothecia occurring in droves, collapsing on drying, with the long hairs covering the hymenium. Probably no species of *Scutellinia* is as easily recognized as this, even macroscopically, whether fresh or

dried. Oddly enough, Cash misidentified D 2965 = D&W 2965 = BPI 573508.

46. **Scutellinia* cfr. *subhirsuta* Svrček

Reported as *Lachnea scutellata* (L.) Gill. (Cash 1938).

Comment: One specimen, S&S 563 = BPI 573506, comes very close to *S. subhirsuta*, but the distribution seems wrong, judging from Schumacher's (1990) monograph, because this would constitute the first non-European report. It may be an undescribed species.

Order Lecanorales

47. **Dactylospora stygia* (Berk. & M. A. Curtis) Hafellner var. *striata* Hafellner

Reported as *Karschia taveliana* Rehm (Cash 1938).

Comment: Hafellner (1979) concluded that *Karschia taveliana* was synonymous with *Dactylospora stygia* var. *stygia*, one of three varieties that he recognized for this species. One of these varieties, *D. stygia* var. *striata*, was described as new from specimens examined from various subtropical areas, including S&S 570 = BPI 674658 and S&S 572 = BPI 674654 that Cash identified as *K. taveliana*. BPI has also cataloged this species as *K. taveliana*. Hafellner designated S&S 572 as the type specimen of *D. stygia* var. *striata*.

Excluded Species

The following species were included by Cash (1938) as Discomycetes but are now classified as Dothideomycetes.

Class Dothideomycetes
Order Patellariales

Do. 1. *Rhizodiscina lignyota* (Fr.) Hafellner

Reported as *Karschia lignyota* (Fries) Sacc. (Cash 1938).

Do. 2. *Rhytidhysteron rufulum* (Spreng.) Speg.

Reported as *Tryblidiella rufula* (Spreng.) Sacc. (Cash 1938).

Do. 3. *Patellaria atrata* (Hedw.) Fr.

Reported as *Patellaria atrata* (Hedw.) Fries (Cash 1938).

Discussion

Altogether, 47 species, one with two subspecies, of Discomycetes are recorded here from the Hawaiian Islands (six orders, 30 genera). Three previously reported species were misidentified and apparently do not occur in Hawai'i. Fifteen taxa are reported as new to Hawai'i. Three of the species reported by Cash (1938) as Discomycetes have been reclassified in the loculoascomycetous Dothideomycetes.

The publications cited in this compilation of the Hawaiian Discomycetes do not represent exhaustive efforts in the collecting of Discomycetes. Stevens (1925) identified only five species of Discomycetes among the 393 species of Fungi he identified during 4 1/2 months in Hawai'i. The 35 species of Discomycetes identified by Cash (1938) were from the collections of C. L. Shear and N. E. Stevens and the herbarium of Otto Degener. Shear and Stevens collected in Hawai'i during the winter of 1927–1928, and although Degener collected extensively in Hawai'i, he was a phanerogamic botanist and collected Fungi only as he happened upon them. Other published records of Hawaiian Discomycetes cited here are from monographs in which collections examined happened to be from Hawai'i (Sherwood 1977*a*,*b*,*c*, Carpenter 1981), and *Sarcoscypha mesocyatha* was reported from Hawai'i by Harrington (1997) as previously undescribed. G.J.W. collected on the islands of Kaua'i, O'ahu, Maui, Lāna'i, and Hawai'i between 1990 and 1996 but only identified nine species of Discomycetes new to the Islands, from Kaua'i, O'ahu, and Moloka'i, because the purpose of the collecting trips was to survey the Agaricales. Discomycetes were collected only where they occurred with agarics. In the absence of an intensive survey on the Discomycetes of Hawai'i, estimating the number of species that may occur in Hawai'i is not possible at this time.

Stevens (1925) was the first mycologist to speculate on endemic and indigenous species of Fungi in Hawai'i. One of the taxa in which he made such designations was the Uredinomycetes (rusts). He designated rust species as

endemic, indigenous, or introduced, based on the hosts on which they were associated. However, it seems unlikely that the same can be done with the Discomycetes and other fleshy Fungi. Rusts are obligate parasites and usually have specific host preferences. In addition, because of their economic significance, they have been well studied and their distribution is well known. In the case of many taxa of fleshy Fungi, distribution records are often poorly known and preference for substrate is usually variable. Thus, designating species as endemic or indigenous for many species of fleshy Fungi, at this time, seems to be more anecdotal than scientific, and evidence beyond apparent host preference is required before we can make such designations.

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